NOAA Research in Maryland

MD-1 through 8 (Statewide)

Climate and Global Change Program

NOAA is responsible for providing climate information to the nation in order to prepare and protect climate sensitive sectors of society and the economy. To carry out this mission, NOAA's Climate and Global Change Program, headquartered in Silver Spring, conducts focused scientific research to understand and predict variations of climate. The Program is comprised of a number of research elements, each focusing on a specific aspect of climate variability. Taken together, this research contributes to improved predictions and assessments of the effects of climate variability and change on different environments over a continuum of time scales from season to season, year to year, and over the course of a decade and beyond. This research is accomplished through the strong support of the academic and private sectors, as well as NOAA and other federal laboratories. In FY 2001, NOAA's Climate and Global Change Program provided approximately $7,027,700 in support of climate research in the State of Maryland. For more information please visit http://www.ogp.noaa.gov

MD-1 through 8 (Based in College Park - serves entire state)

National Sea Grant College Program
Maryland Sea Grant College Program

The Maryland Sea Grant College Program, part of the National Sea Grant College Program, is a statewide program of research, education, and extension services that works to promote the wise use of marine resources. Current research programs are targeting coastal ecosystem health, including the balance between the demands of population growth and the needs of Chesapeake Bay; economic leadership, specifically relating to fisheries and aquaculture; and new technologies. The public, industry, and policy makers are kept informed on issues related to aquaculture, oyster disease, commercial and recreational fishing, natural resources conservation and biodiversity, coastal water quality, seafood processing, and nutrition through Maryland Sea Grant's communications and extension programs. These programs publish two public newsletters, *Maryland Marine Notes* and *Maryland Aquafarmer*. Maryland Sea Grant also supports targeted research and outreach efforts designed to answer specific questions and help the general public understand the nature and scope of Pfiesteria in Maryland's coastal waters. In addition, Sea Grant funds efforts to understanding the ecological consequences of the spread of zebra mussels and other harmful exotic species and determining how to prevent them from entering the Bay. In FY 2001, Maryland Sea Grant projects received funding of approximately $2.12 million from the National Sea Grant College Program. Fore more information please visit http://www.mdsg.umd.edu/index.html

MD-1 (Wye)

Air Resources Laboratory
Atmospheric Integrated Research Monitoring Network

AIRMoN, or Atmospheric Integrated Research Monitoring Network, is an array of sampling stations designed to quantify the extent to which changes in emissions affect air quality and deposition. NOAA's Air Resources Laboratory operates both elements of the network, AIRMoN-Wet and AIRMoN-Dry. The goal of AIRMoN-Dry is to identify and understand the processes that cause the deposition of atmospheric pollutants without the presence of precipitation in order to quantify dry deposition rates at locations where direct measurement is not possible. An AIRMoN-Dry station is located near Wye. Prime users of these data include ecologists, agriculturists, foresters, and power companies affected by Clean Air Act legislation. For more information please visit http://www.arl.noaa.gov/research/programs/airmon.html

MD-1, 2, 3, and 5 (Chesapeake Bay)

Great Lakes Environmental Research Laboratory
Trophic Interactions in Estuarine Research

Scientists from NOAA's Great Lakes Environmental Research Laboratory participate in the Chesapeake Bay Land Margins Ecosystem Research: Trophic Interactions in Estuarine Research program in collaboration with the University of Maryland Center for Environmental and Estuarine Studies. This program investigates mechanisms affecting secondary production of the Bay's estuarine ecosystems. In an ecosystem such as Chesapeake Bay, regional and inter-annual variations in primary and secondary production are strongly influenced by the pulsing nature of inputs. These inputs come from the adjacent watershed, atmosphere and coastal ocean, and by the associated temporal variabilities in circulation and fine-scale (1-10,000 meters) physical structures, which act as sites of intense ecological activity. For more information please visit http://www.glerl.noaa.gov

MD-1, 2, 3, and 5 (coastal waters)

Mid-Atlantic Bight National Undersea Research Center
National Undersea Research Program

The Mid-Atlantic Bight (MAB) National Undersea Research Center supports undersea research in the Mid-Atlantic Bight, a region which extends from Montauk, New York, to the Virginia/North Carolina border. MAB is administered by the Institute of Marine and Coastal Sciences at Rutgers University in New Brunswick, New Jersey. It is one of six regional centers supported by the National Undersea Research Program. The Center provides access to undersea research platforms (such as submersibles, remotely operated vehicles, and SCUBA), including Long-Term Environmental Observatories. Key research includes processes governing change and stability in marine ecosystems; distinguishing between natural and anthropogenic changes in the marine environment; characteristics of essential fish habitat; recruitment of marine organisms; and the effects of physical and environmental processes on water disposal, fisheries, nuisance algal blooms, biodiversity/habitat, hypoxia, toxic contaminants, and pathogens. FY 2001 funding for the Center totaled $1.34 million. For more information please visit http://marine.rutgers.edu/nurp/mabnurc.html

MD-4 (Camp Springs)

Climate and Global Change Program
Operational Forecasting Support

NOAA's Climate and Global Change Program provides support for the NOAA National Centers for Environmental Prediction (NCEP) in Camp Springs. NCEP provides climate services to the nation by assessing and forecasting the impacts of short-term climate variability, emphasizing enhanced risks of weather-related extreme events, for use in mitigating losses and maximizing economic gains. NOAA's Climate and Global Change program supports NOAA's operational forecasting mission at NCEP through focused research and development projects aimed at improving the climate forecast system and developing climatic data sets for improved climate forecast products. The R&D projects at NCEP presently supported by the Program include development and improvement of ocean and land data assimilation systems and coupled atmosphere-ocean-land climate forecast model for forecasting El Niño and its global impacts on US seasonal climate variations, and a regional reanalysis effort to develop high quality, historical land and atmosphere data set for North America for research and operational community to understand and predict short term climate variations and their regional impacts. For more information please visit http://www.ncep.noaa.gov

MD-4 (Camp Springs)

Climate Observations and Services Program
Operational Climate Prediction

One NOAA mission is to deliver national and global weather, water, and climate guidance, forecasts, warnings, and analyses. To develop climate forecasts, physically realistic modeling must be obtained for the atmosphere, ocean, and land surface coupled system. The use of dynamical models in climate forecasting is still in its infancy, and considerable research and development work is necessary to improve forecast skill. With funding of $339,900 in FY 2001 from NOAA's Climate Observations and Services Program, the National Center for Environmental Prediction began operationally using a global atmospheric circulation model, a land surface model, ocean observations handling, ocean model and data analysis modules for climate applications, coupling modules which connect the atmosphere-ocean and atmosphere-land interfaces, and a diagnostic and monitoring package to evaluate system performance for providing routine climate forecasts. For more information please visit http://www.ncep.noaa.gov

MD-4 (Camp Springs)

Climate Observations and Services Program
Climate Models-Ocean Data

FY 2001 funding of $510,500 from the Climate Observations and Services Program establishes into operations the National Centers for Environmental Prediction (NCEP) operational Coupled Climate Forecast System, improvements to NCEP's ocean data assimilation system, and climate sea surface temperature product. These advances enhance NOAA's mission to deliver national and global weather, water, and climate guidance, forecasts, warnings, and analyses. For more information please visit http://www.ncep.noaa.gov

MD-4 (Silver Spring)

Climate Observations and Services Program
Satellite Altimetry

Today's satellite altimeters combine unprecedented accuracy with speed of data delivery, enabling NOAA to enhance several of its operational products. FY 2001 was an important transition year for satellite altimetry, with three new missions coming online. Each one required significant involvement and effort from NOAA's Laboratory for Satellite Altimetry in Silver Spring. Moreover, it is likely that a total of five altimeters will be operating simultaneously during the period 2001-2002. In FY 2001 the Climate Observations and Services Program provided $243,200 to fund additional manpower and contractor services necessary to take full advantage of this unique opportunity. For more information please visit http://ibis.grdl.noaa.gov/SAT/

MD-4 (Silver Spring)

Office of Ocean Exploration

In 2001, with a $4 million appropriation from Congress, NOAA launched a systematic, strategic effort through the Office of Ocean Exploration to search and investigate the oceans for the purpose of discovery. The NOAA Office of Ocean Exploration is located in Silver Spring. For more information please visit http://www.oceanexplorer.noaa.gov

MD-4 (Suitland)

Climate Observations and Services Program
International Satellite Cloud Climatology Project

The International Satellite Cloud Climatology Project was established in 1982 as part of the World Climate Research Program to collect and analyze satellite measurements related to clouds.
In FY 2001, the NOAA Climate Observations and Services Program funded the Project at $192,200 to support associated data processing and archival activities. The Sector Processing Center, located in Suitland, collects raw satellite data from NOAA's polar orbiter satellites and delivers a condensed data set to NASA's Global Processing Center. The Central Archive, also located in Suitland, receives polar-orbiter and geostationary data products from these two processing centers and distributes them to the public. For more information please visit http://www.nesdis.noaa.gov

MD-5 and 6 (Annapolis and Hagerstown)

Forecast Systems Laboratory
GPS Meteorological Observing Systems

NOAA's Forecast Systems Laboratory (FSL) operates a rapidly expanding network of GPS Meteorological (GPS-Met) Observing Systems to monitor the total quantity of precipitable water vapor in the atmosphere. Currently, there are 93 systems over the contiguous 48 states and Alaska, and plans are being made to extend these observations to Hawaii, Puerto Rico, the Caribbean Islands, and Central America. Water vapor is an important but under-observed component of the atmosphere

that plays a major role in severe weather events and the global climate system. GPS-Met systems provide accurate water vapor measurements under all weather conditions, including thick cloud cover and precipitation, and do so at very low cost. The major reason why this system is so economical is that the network is being developed by FSL in cooperation with federal, state and local government agencies, universities, and the private sector. The GPS stations provide high-accuracy surveying and navigation services for National defense, automated agriculture, safe land and marine transportation, government infrastructure management, and 911 emergency response services. Fortuitously, these systems can also be used for meteorology with the addition of surface weather sensors. GPS-Met systems located in Maryland include sites operated the U.S. Department of Transportation near Annapolis and Hagerstown. For more information please visit http://www.gpsmet.noaa.gov/jsp/index.jsp

MD-5 (Calverton)

Climate and Global Change Program
Center for Ocean Land Atmosphere Studies

NOAA's Climate and Global Change Program provides support for the Center for Ocean Land Atmosphere Studies (COLA), a private sector institute located in Calverton. COLA is a group of uniquely qualified scientists dedicated to understanding the problem of climate variability with special emphasis on the role of interactions between earth's oceans, atmosphere, and land surface. The primary goal of COLA is to foster interdisciplinary research in order to improve understanding of the physical processes in the atmosphere, at the land surface, in the oceans, and the interactions among these components. COLA utilizes comprehensive physical models of atmospheric, oceanic, and land surface processes to carry out sensitivity and predictability studies. For more information please visit http://grads.iges.org/cola.html

MD-5 (Greenbelt and Laurel)

Space Environment Center
Satellite Instrumentation

NOAA's Space Environment Center (SEC), headquartered in Boulder, Colorado, is cooperating with NASA in Greenbelt and the Johns Hopkins University Applied Physics Laboratory in Laurel to modify three instruments of the NASA ACE satellite to improve quality and access of data on space weather. Solar geomagnetic storms are a natural hazard, like hurricanes and tsunamis, which SEC forecasts for the public's benefit. Severe geomagnetic storms cause communications problems, abruptly increase drag on spacecraft, and can cause electric utility blackouts over a wide area. The location of ACE satellite between the earth and the sun enables ACE to give about a one hour advance warning of impending geomagnetic activity. The ACE spacecraft was launched in August 1997 to allow improved monitoring of the solar cycle. Space weather impacts the power industry, radio communications and navigation, astronauts safety, satellite operations, and national defense. For more information please visit http://www.sec.noaa.gov

Great Lakes Environmental Research Laboratory
Complexity and Stressors in Estuarine Systems

Scientists from NOAA's Great Lakes Environmental Research Laboratory are collaborators in the COmplexity And STressors in Estuarine Systems (COASTES), a multidisciplinary program designed to improve the understanding of the effects of multiple stressors in coastal systems and the role that the complexity of natural systems plays in influencing responses to anthropogenic stress. Using the Patuxent River as a model ecosystem, the program focuses on watershed studies, water quality, estuarine ecology, ecological models, fisheries models, and economic valuation. GLERL's principal objective is the development and implementation of spatially explicit fisheries models to characterize the pelagic fish community of the Patuxent River estuary. The Academy of Natural Sciences Estuarine Research Center is the lead institution for COASTES. For more information please visit http://www.glerl.noaa.gov

For further information about these and other NOAA programs, please contact NOAA's Office of Legislative Affairs at (202) 482-4981.

February 2002